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All of the 47 E.C.W. camps assigned to the Division of Drainage have been located, and on July 22 enrollees had been received at 5 out of the 6 camps in Iowa, at the 6 camps in Missouri, at 8 out of the 9 camps in Ohio, and at 1 out of the 8 camps in Indiana. It is expected that there will be considerable delay in receiving men for the remaining camps, but it is hoped to have all of them in operation by the middle of September.

During the first part of July, B.O. Childs made a trip to Washington for a conference relative to the E.C.W. program in Louisiana.

Prof. Q.C. Ayres of Ames, Iowa has been employed for the month of August to assist in directing the work of the drainage E.C.W. camps in that State.

During the past 3 months D.G. Miller has been assisting J.G. Sutton in organizing the work of the E.C.W. camps in Iowa, but will return to his headquarters at St. Paul on or about July 27.

Chas. A. Bennett presented a paper entitled "Some Mechanical Elements Involved in Good Ginning" before the Alabama Cotton Ginners' Association in Montgomery on July 11.

New machinery is being installed and old machinery rearranged at the cotton ginning laboratory in preparation for the 1935 ginning season, which will begin this month with tests on Texas cotton. Important cleaning and extracting tests, saw and tooth studies, and numerous other research activities are contemplated.

W. W. McLaughlin left Berkeley the latter part of May to inspect the migratory waterfowl refuge work being constructed under supervision of our Bureau in Montana, North Dakota, South Dakota, Nebraska, and Minnesota, with headquarters at Minot, N.D. Nine contracts have been awarded and the contractors are busy on 8 of these jobs. Mr. McLaughlin continued on to Washington, D.C., to confer with officials of our Bureau relative to the work for the ensuing fiscal year, and also to confer with representatives of the Bureau of Biological Survey. He returned to California by way of Minot, and spent several days in Utah discussing plans and procedure for the snow survey and irrigation water supply forecasting project to be carried on by the Division of Irrigation in the Western States under the leadership of J.C. Marr, with Prof. George D. Clyde of Utah as consultant and Dr. J.E. Church of Nevada as associate.

In connection with the project dealing with underground storage of water, Dean C. Muckel reports that water was spread artificially on the Azusa, Calif., experimental plots from January 18 to June 10 with only two interruptions, both of which were caused by muddy water in the stream that furnishes the water supply, making it undesirable for spreading. Record for 127 days was obtained on each of the two plots, and continuous records were kept of the underground water level and water temperatures during the spreading season.

Preliminary work on a study of snow surveys and seasonal stream forecasting was begun by J.C. Marr, assisted by Prof. Geo. D. Clyde of Utah Agricultural Experiment Station. State and government officials and other interested parties in eight of the Western States and British Columbia were interviewed regarding the need for snow surveys and seasonal stream forecasts for the proper distribution and use of irrigation water.

A field study of Diesel engines for pumping for irrigation was made by Carl Rohwer in Colorado, Nebraska, Arkansas, and Kansas. The purpose of the study was to determine the cost of operation, the dependability of service, and the length of life of the new type Diesels. The study indicated that, from the standpoint of fuel only, these engines operate at a much lower cost than gasoline engines, but when the higher first cost is considered the difference in the total cost of power produced is not as great. There is, however, a marked saving in favor of the Diesel engines. It is essential that the fuel be entirely free from abrasive materials such as dust or sand, for the reason that the fuel is injected into the combustion chamber at an extremely high pressure, and any abrasive material rapidly wears the fuel pump and injection nozzle under these conditions. For best results the engine should not be loaded to over 75 percent of their rated horsepower.

The vortex-tube sand trap on the Railroad Lateral near Wellington, Colo., is proving to be quite successful, according to R.L. Parshall who designed it. This installation consists of three tubes set at 60 degrees to the axis of flow in a flume 12 feet long and 4 feet wide. These tubes outlet into a compartment along the side of this flume, and the elevation of the floor of the flume provides a slight drop or loss in head at the downstream end of the structure. By proper regulation of a set of flash boards at the side of this compartment it is possible to secure good tube action, and the water discharged from the three tubes is returned to the lateral without loss, and the bed load material is left deposited in the compartment. Observations show that the deposited material can be flushed out in five minutes. The capacity of the catchment basin is about 3 cubic yards, and it has been the experience so far that sluicing out is necessary three or four times each day. Samples of the material trapped out show that the first tube upstream gets the major portion of the load and the downstream tube traps a large amount of very fine sand.

A progress report on the survey of irrigation conditions, practices, and methods in Salt Lake and Utah counties on lands supplied with irrigation water from Utah Lake, was submitted by O.W. Israelson.

W.M. Hurst, F.D. Fulton, and Geo. R. Stafford went to Richmond on July 14 and there set up an experimental cerosan grain-treating device, which they had developed, at the T.W. Wood & Son Co.'s warehouse. The following day Mr. Hurst was joined by W.R. Humphries at LaFayette, Ind., where they started investigations to be conducted throughout several Midwestern States on the operation and performance of small grain combines. This work will keep them in the field about six weeks. Messrs. Fulton and Stafford returned to Washington July 16 and reported that the seed treater worked satisfactorily with wheat.

G.A. Cumings left July 21 on an inspection trip to visit the cooperative fertilizer studies and confer with experiment station officials in New York, Ohio, and Michigan. L.G. Schoenleber reported to Washington July 5 to assist in the activities of the fertilizer machinery project.

As a result of the tests conducted on sugar-beet harvester, a few manufacturers have continued their experimental development. E.M. Mervine conferred with the Scott-Viner Co., in Columbus, Ohio, and Valparaiso, Ind. Their beet harvester, which is built commercially, will be tested by him during August in California and later in Colorado and possible Minnesota.

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The Council of the American Society of Agricultural Engineers voted to accept the invitation to have the 1936 annual meeting in Estes Park, Colo. This was no doubt due mainly to the untiring efforts of E.M. Mervine, who appears to have felt that the relaxation afforded by such a spot would be a contributing factor to still larger and better meetings.

O.K. Hedden of the Toledo office spent several days at Madison, Wis., where he assisted J.E. Dudley, entomologist, in cooperative work in methods of control of pea aphid. Several different insecticides were applied with a vapor-generating unit. Best results were obtained apparently with ground derris root, both with the vapor spray and with the regular high-pressure spray outfit. Mr. Hedden also conferred with Doctor Allen at Racine, Wis., regarding his work with finely atomized oil as a spray material.

According to E.M. Dieffenbach, in field spraying experiments made on pecan trees near Albany, Ga., good coverage was obtained when using only one large spray gun from the top of the spray tank or tower on the tank. A supplementary ground gun, which is sometimes used, is especially laborious to handle and its use entails considerable extra labor and material.

Factory inspection of the power car to be used in connection with the investigational work at the new Farm Tillage Machinery Laboratory at Auburn, Ala., was made at Davenport, Iowa by I.F. Reed who is now supervising the assembly and calibration tests of both the power car and the dynamometer. The power car is equipped with a 135 hp. engine, is mounted on eight 34- by 7-inch tires, weighs approximately 8 tons, and has a tread of 21 feet 2 inches. It has 10 speeds ahead, making possible speed variations from 0.2 mile to 10 miles per hour. It will accelerate a load of 5,000 pounds to 6 miles per hour in 3 seconds. A superframe arrangement for the car, traveling crosswise of the plot, carries the dynamometer drawbar heads and recording instrument. The dynamometer varies from those usually used in agricultural engineering studies in that instead of measuring only the resultant load or one of its components, it is equipped to measure simultaneously the three components, (1) in the direction of travel and parallel to the ground surface, (2) at right angles to direction of travel and parallel to surface, and (3) the vertical force on the hitch point. These three forces are recorded independently, thus enabling the calculation of the resultant draft and the angles at which the components work.

Soil structural variations were studied by John W. Randolph upon the Prattville, Ala., field. It was observed that tillage practices influence the degree and state of soil aggregation which in turn has marked effect upon the growth of cotton. Tillage practices that break the soil into clods show, with the mellowing process of time, a distinct granular soil structure on which the cotton growth is the best. Excessive late machine tillage work gives the soil a dense, putty-type structure which, during slight extremes in moisture conditions, slows up the growth of the cotton plant. A manuscript covering the three years' experimental work upon the Prattville field is being prepared.

On the corn production machinery project at Ames, Iowa, Claude K. Shedd reports that an exceptionally wet June prevented normal cultivation of corn. Results will, however, yield valuable information as to the effect of different methods of planting and cultivating under wet soil conditions. Surface planting and early cultivation have resulted in better growth of corn and better control of weeds than listing or delayed cultivation. Implements for giving light, early cultivation, such as rotary hoe or spring-tooth weeder, produced little if any better results than where early cultivation was omitted.

D. A. Isler spent June 18 and 19 at the Toledo office conferring with Messrs. Merrill, Hedden, and Graves concerning the use of the small orchard burner and other investigations in progress there. One of the orchard burners has been shipped to Presidio, Texas for use in pink boll-worm control experiments.

E.D. Gordon reports that test runs conducted with the experimental vertical forage dryer at Jeanerette, La., thus far indicate that 660 pounds of water are removed per hour at a temperature of 860° F. The dryer is being increased in height and a rearrangement of the manner for admitting the furnace gases should give improved performance.

The Bureau is creditably represented at the exhibit of the Association of Federal Architects now on display in the National Museum. Public Works Projects, under the direction of J.E. Miller, has on exhibit a number of working drawings of some of the latest projects in addition to many sketches in various mediums done by individuals of that division. The Division of Structures has presented several groups of farmhouse plans and a cover design for a farmers' bulletin.

A. H. Senner has completed a comprehensive series of tests of oil-burner efficiency and operating characteristics and is now starting a series of tests on bottled-gas equipment suitable for farm installation.

No bulletins were issued during the past month.